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REPORT

OF THE

WISCONSIN

State Tuberculosis Commission

Prepared in compliance with Joint Resolution No. 12
of the Legislature of 1903

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MEMBERS OF THE COMMISSION, 1903-1905.

GUSTAV SCHMITT, M. D., President	Milwaukee
MICHAEL RAVN, M. D., Vice President	Merrill.
H. L. RUSSELL, Ph. D., Secretary	Madison.

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LETTER OF TRANSMITTAL.

To His Excellency, ROBERT M. LA FOLLETTE,
Governor of Wisconsin.

DEAR SIR:—I have the honor to transmit to you herewith, the report of the Wisconsin State Tuberculosis Commission, which has been prepared in compliance with Joint Resolution, Number Twelve, of the Legislature of 1903.

Respectfully yours,
H. L. RUSSELL,
Secretary,

29425

JOINT RESOLUTION NO. 12.

WHEREAS, the prevalence of pulmonary tuberculosis demands that action be taken by the legislature of this state to afford relief from existing conditions; and

WHEREAS, the movement of the State Sanitarium where sufferers from tuberculosis can be given the necessary treatment and education to cure and prevent the spread of this dread disease, has received practically the unanimous indorsement of the press of this state as well as men prominent in the medical profession and and other walks of life; therefore, be it

Resolved by the Assembly, the Senate concurring, that the Governor of this State be requested to appoint a commission of three men, one at least of whom shall be a physician who has given some study to this question, to investigate conditions existing in this state in this regard, the advisability and practicability of the establishment of such a sanitarium and to select and suggest a proper site or sites for the same; such commission to report to the governor on or before December 1st, 1904, in order that the governor may make recommendations on the matter to the next legislature. Such commission shall serve without pay, but their actual traveling expenses during this service shall be paid out of any funds in the state treasury not otherwise appropriated.

GENERAL SYNOPSIS OF REPORT.

Amount of Tuberculosis in the State.

From the vital statistics on file in the office of the Secretary of State, it appears that 2,175 deaths from tuberculosis were reported in 1900, and 2,142 in 1902. In a considerable proportion of death records, no cause of death is assigned and it is highly probable that the annual loss of life in this state from tuberculosis is about 2,500 persons each year. Even on the basis of the official records, it is over 11 per cent of the total mortality, or based on the living population, 10.5 deaths per 10,000 population.

In Milwaukee city, the yearly loss has ranged from from 395 to 481 for the past ten years.

While about 2,500 people die every year from this disease, there are from 7,000 to 8,000 other cases affected in various stages, making in all an army of about 10,000 of our citizens that are more or less incapacitated from active life, and who sooner or later, for the most part, fall a victim to this disease. This loss falls mainly on the most productive periods of life as by far the larger proportion of all tubercular deaths occur between 18 and 30 years of age.

Suggestions as to Prevention of this Disease.

Tuberculosis may be prevented in large part by the exercise of certain precautionary measures that will check more or less completely the wide spread distribution of the virus of the disease.

1. As the disease germ is largely spread through the medium of matter coughed up from the lungs, it follows that adequate anti-spitting laws, properly enforced, materially reduce the danger from this source.

2. Compulsory notification of all cases of the disease should be made so that the boards of health through the attending physician, might see that proper measures are taken to prevent the spread of the disease in the homes.

3. This disease is essentially a house disease. Apartments occupied by tubercular patients in the latter stages of the disease are sure to be infected, and many cases develop each year through the lack of thorough disinfection of these infected centers of contagion.

(See map, page 23, showing localization of this disease in certain blocks in the city of Milwaukee.)

4. The education of the masses as to the exact nature of the disease is doing much to reduce its prevalence, but this work must be continued vigorously for years to come.

5. The almost marvelous results as to the treatment of this disease that have obtained in sanatoria offer not only succor to those already afflicted, but actually result in diminishing the spread of contagion by the removal of infected persons.

Treatment of Tuberculosis in Sanatoria.

Tuberculosis has been so long regarded by the public as an absolutely incurable disease that it is difficult to convince those afflicted with it that any aid can be had; and yet the results obtained, show that it yields readily to hygienic measures, and in the earlier stages can be easily cured. Formerly it was thought necessary to resort to change of climate for treatment, but experience has amply demonstrated that the disease can be cured quite as readily in Wisconsin as in the west. Many cases are unable in any event to make the climatic change and the introduction of sanatorium measures at home by the state affords succor to many who would otherwise be doomed to early death.

The methods followed in sanatoria are simply hygienic measures—open air, abundance of nourishing food and close medical supervision. In the open air the body quickly acquires a degree of resistance that enables it to throw off the disease. The experience at the Massachusetts State Sanatorium (the first state institution in this country) shows that the average period of residence is about six months. From 40–50 per cent of all cases received are discharged as greatly improved or cured, while over 75 per cent of those having the disease in the early stages are practically healed.

The permanency of such cures, is shown by the statistics of the Adirondack Sanatorium which has been in operation nineteen years, and in a recent census made of 1,066 cases which have been treated from 2—18 years, 66 per cent of those admitted as incipient cases are now well, and in 560 advanced cases, nearly one-third are now in good health. These results are being duplicated either in private or state institutions in practically every part of the country where they are being tried. The earlier the cases are received, the more rapid and larger the number of cures, but in the great majority of instances, a decided improvement is to be noted.

Reasons Why the State Should Build a Sanatorium for the Treatment of this Disease.

1. From a humanitarian point of view the state should aid those afflicted with this dread, but curable, disease. When we realize the enormous loss of life which is occasioned and the readiness with which improvement and often cures can be established, it is apparent that the state should extend succor to this class as well as to its other unfortunates. Owing to the relatively short

period of residence necessary for improvement, in cases that can be helped at all, the active influence of such an institution is much greater than in hospitals and asylums where the inmates are often a charge for life.

2. Purely from a business point of view, the economic drain on the resources of our commonwealth caused by the loss in wages, sickness, etc., of these thousands of sufferers is to be measured in millions of dollars every year. The state, of necessity, is often forced to carry the burden of providing for the orphan and those pauperized by this scourge. When we recognize that great improvement can be secured in at least one-half of all cases admitted to sanatoria at a moderate expense for maintenance, would it not be the part of business foresight to do for our fellows at least as much as we are spending each year to eradicate the disease among live stock.

3. The sanatorium removes from the home the center of contagion and thus stops further spread of the disease. In the sanatorium, the patient is taught how to care for himself so as not to be a menace to his fellows.

No danger need be apprehended from institutions of this class, either so far as inmates are concerned, or the region in which they are located. When taught to properly care for his sputum, the consumptive becomes relatively harmless. Not a single case of infection of nurses or employes has been reported from the Adirondack institution during its whole period of existence (19 years).

4. After his return to his home, the discharged patient becomes a messenger of the gospel of hygienic living, and thus the educative influence of the institution is productive of the greatest good. The institution in this way becomes a potent factor in the prevention of the disease throughout the state.

5. While the affected patients may successfully follow the hygienic treatment outside of an institution, the rigid discipline and close medical supervision secured

in the sanatorium are such as to render a cure much more likely to be effected.

6. A cure effected at home is likely to be more lasting than one secured under different climatic surroundings. Hence, as most residents find it inadvisable to permanently change their homes to a different climate, it is better to treat the disease under Wisconsin conditions.

Then, too, for the great majority of affected individuals a climatic change is impossible for financial reasons.

What Other States Are Doing.

While this movement in this country has been largely fostered by private organizations, more recently different states have begun to cope with the problem by the erection of state institutions intended primarily for those afflicted with the disease in its earlier stages but who are unable to pay the whole cost of maintenance.

Massachusetts has a state sanatorium capable of accommodating 400 patients, that has now been in successful operation for eight years. New York built in the Adirondacks a year ago, a large institution of this kind. Rhode Island has just finished a $100,000 structure for her tubercular poor. New Jersey has also a well-equipped institution. Connecticut and Pennsylvania are granting annual subsidies to organizations already in the field. Minnesota and Ohio purchased sites last year and it is expected that the buildings will be authorized this session. Iowa, Illinois, Maine, Maryland, New Hampshire, Vermont and a number of other states are moving in this matter, having appointed commissions to investigate the problem for their respective commonwealths. The commission appointed in compliance with the resolution of the legislature of 1903, presents in this report the needs of Wisconsin in this matter. One has only to investigate the merits of this proposition to be thoroughly convinced of the necessity and wisdom of such a movement.

REPORT OF THE COMMISSION.

To His Excellency, ROBERT M. LAFOLLETTE,
Governor of Wisconsin.

DEAR SIR:—The Commission appointed by you on August 3, 1903, in compliance with joint Resolution No. 12, of the legislature of that year, begs leave to submit to your Excellency the following report. In accordance with the terms of that resolution, it has been our endeavor to investigate and report upon (A) the conditions existing in the state of Wisconsin, relative to the prevalency of tuberculosis, (B) its treatment and prevention, (C) the advisability and practicability of the establishment of a sanatorium * in which to treat these suffering individuals, and (D) to select and suggest a proper site or sites for the same.

Owing to the inadequacy of the vital statistics collected by the state, it was impossible to determine directly from the records, the losses due to the ravages of this disease. The only attempt which the state makes to collect such statistics is to record the births, deaths and marriages, which are reported by the local county officers. No statistical study has ever been made of the causes of deaths, and the distribution of the death rate, as to different kinds of disease. To secure this desired information, we have examined the official mortality records on file with the secretary of state for the years 1895, 1900 and 1902, embracing over 60,000 deaths.

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*Recent usage is now generally in favor of the word "sanatorium" rather than "sanitarium" for institutions of this class. "Sanatorium" is derived from *sanare*, to heal, and signifies a place in which to be treated or healed, while "sanitarium" is from *sanitas*, health, and is applied to a healthy place, a resort for convalescents and not a place for treatment.

The records for the earlier years show so much evidence of inaccuracy as to render a study of them unsatisfactory for statistical purposes. For example, in Bayfield county there were recorded in all five deaths in 1895, and 109 deaths in 1900. For Winnebago county 948 deaths were recorded in 1895, of which 131 were due to consumption, and in 1900 there were recorded 579 deaths, of which 69 cases died of consumption. These evident inaccuracies were found in the record of a considerable number of other counties. Again, the cause of death, age, occupation, residence, sex and nationality, were frequently omitted or incompletely filled out. Inaccuracies of this character were especially manifest in the records previous to the year 1900; we have therefore rejected these from further consideration, and the conclusions further presented are based on the years 1900 and 1902 after all possible irregularities were taken into consideration.

Vital statistics are of so much value for such statistical studies as these and other purposes, that we beg leave to call your attention to the inadequacy of these records, and suggest that improved methods of collection and record be instituted.

(A) Amount of Tuberculosis in the State.

In determining the prevalency of this disease within the state, we present herewith the actual death losses as taken from the official records for the years 1900 and 1902. The vital statistics for these years have been corrected by the addition of those deaths which occurred in the respective years, but were not reported until later. This census shows that **2175** *deaths from tuberculosis were reported in 1900 and* **2142** *in 1902.* In the official records for 1900 there are 501 cases in which no cause of death is given. Unquestionably a proportional part of these are tubercular.

It is definitely known, in a considerable number of cases at least, that deaths mainly due to tuberculosis are reported under other headings, as for instance when the primary cause of death may have been more or less complicated by some other disease than tuberculosis. Again, it may happen, in deference to the wishes of the family or to preserve the insurance ability of relatives that some contributory or secondary cause is given preference over what was more likely to have been the real cause.

There is no question but that the errors in the official records are much more likely to be on the side of omitting tuberculosis deaths rather than including what does not really belong there; and therefore, it is unquestionably true that the actual losses each year are really higher than the figures here given, probably not far from 2,500 annually.

When compared with the total deaths occurring in the state, it appears that the loss of life from tuberculosis alone ranges from 10-11 per cent of all deaths, or of all persons dying, one out of every nine or ten fall a victim to this scourge.

As the total mortality from year to year may fluctuate materially (due to wide-spread outbreaks like grip, pneumonia, etc.), it is preferable to express the relation as the number dying from any disease per unit of population, say 10,000 persons. When expressed in this way the death rate for tuberculosis in Wisconsin for year 1900 (the census year) is 10.52 per 10,000 population.*

RELATION OF AGE OF INDIVIDUAL TO DISTRIBUTION OF THE DISEASE.

It must further be taken into consideration that this disease strikes at the very flower of our commonwealth.

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*The U. S. census report for that year places Wisconsin at 11.4 but this difference is attributable to the fact that the federal census year ends in June, while the data given above are for the calendar year.

Although occurring to some extent at all ages, yet it is largely true that the disease is one which affects young manhood and young womanhood rather than the aged, the infirm or the child. The loss falls heaviest, therefore, upon the most productive years of life. The susceptibility toward tuberculosis is undoubtedly increased in great measure from 15 or 20 years of age to the period of early maturity. Over one-half of all tubercular deaths of a pulmonary character fall within the limits from 15 to 35 years of age, and when considered in connection with all deaths actually occurring between these ages, the magnitude of the loss is rendered even more impressive. Of persons dying between the ages of 15 and 40, nearly one-third to one-half fall a victim to this scourge.

The attempt has been made to study the distribution of the disease in various portions of the state, and when the total tubercular deaths are grouped on this basis, the following percentage is found:

Variation in tubercular death rate in different portions of the state.

	No. Counties.	Tubercular death rate per 10,000 population.
Eastern section	16	14.14
Central section	30	9.43
Western section	25	8.01

It appears, therefore, that the disease is more abundant in the eastern section of the state than elsewhere. The main factor in the increased percentage in this region is undoubtedly the relative density of the population, the death rate being generally larger in urban communities. Possibly also the increased humidity of the eastern section exerts some effect, although concerning this nothing absolute can be said. If comparison is made between the deaths in the northern and southern portions, a considerable variation is also to be observed. Excluding the losses occurring in counties adjacent to Lake Michigan, the rate per 10,000 population in the north half of the state is 7.24, while it is 10.17 for the south half. Doubtless the influence of density of population is the most potent factor in explaining this difference.

While the death rate for the entire state is 10.52 per 10,000 population, that of Minnesota is about 9.5 for the same period.

In Table I are presented the data collected as to total number of deaths from tuberculosis for the years 1900 and 1902. Fig. 1 shows in graphical form the distribution by counties of all cases reported in 1900.

TABLE I.—*Total deaths from tuberculosis in Wisconsin (based upon the mortality statistics for years 1900-1902,) also death rate per 10,000 population.*

County.	1900. Total deaths reported from tuberculosis.	1900. Tuberculosis death rate per 10,000 population.	1902. Total deaths reported from tuberculosis.
Adams	7	7.65	3
Ashland	31	15.36	24
Barron	19	8.24	26
Bayfield	5	3.46	9
Brown	52	11.21	59
Buffalo	2	1.19	6
Burnett	10	13.30	6
Calumet	11	6.57	20
Chippewa	28	9.86	19
Clark	17	6.50	21
Columbia	38	12.20	38
Crawford	7	4.04	6
Dane	93	13.39	73
Dodge	43	9.22	64
Door	21	11.90	18
Douglas	50	13.76	38
Dunn	17	5.36	30
Eau Claire	31	9.77	36
Florence	2	6.25	2
Fond du Lac	62	13.03	61
Forest	0	00	4
Gates	2	4.29	2
Grant	39	10.30	27
Green	28	12.32	17
Green Lake	6	3.79	9
Iowa	20	8.65	24
Iron	5	7.65	8
Jackson	18	10.30	18
Jefferson	54	15.52	43

TABLE I.—*Total deaths from tuberculosis in Wisconsin, etc.*—Con.

County.	1900. Total deaths reported from tuberculosis.	1900. Tuberculosis death rate per 10,000 population.	1902. Total deaths reported from tuberculosis.
Juneau	20	9.69	15
Kenosha	25	11.53	20
Kewaunee	25	14.53	20
La Crosse	52	12.11	52
Lafayette	20	9.54	27
Langlade	6	4 78	7
Lincoln	16	9.84	15
Manitowoc	77	18.22	60
Marathon	20	4.62	21
Marinette	41	10.39	35
Marquette	7	6.66	7
Milwaukee	523	15 89	455
Monroe	30	10.76	21
Oconto	18	8.74	21
Oneida	4	4.41	3
Outagamie	52	11.50	53
Ozaukee	26	15.90	10
Pepin	7	8 85	10
Pierce	9	3.76	10
Polk	12	6 78	4
Portage	23	7.70	15
Price	6	6 59	8
Racine	73	16.02	65
Richland	17	8.70	19
Rock	42	8.22	54
St. Croix	10	3.72	12
Sauk	30	9.09	27
Sawyer	6	22.48	4
Shawano	22	8.07	22
Sheboygan	57	11.32	55
Taylor	4	3.55	6
Trempealeau	20	8.65	21
Vernon	14	4.95	16
Vilas	0	00	1
Walworth	32	10.96	27
Washburn	1	1.84	6
Washington	38	16.11	24
Waukesha	43	12.21	38
Waupaca	28	8.53	40
Waushara	11	6.89	10
Winnebago	69	11.85	70
Wood	20	7 73	25
	2,175	10 52 (Average rate.)	2,142

Population 1900 —2,069,042.

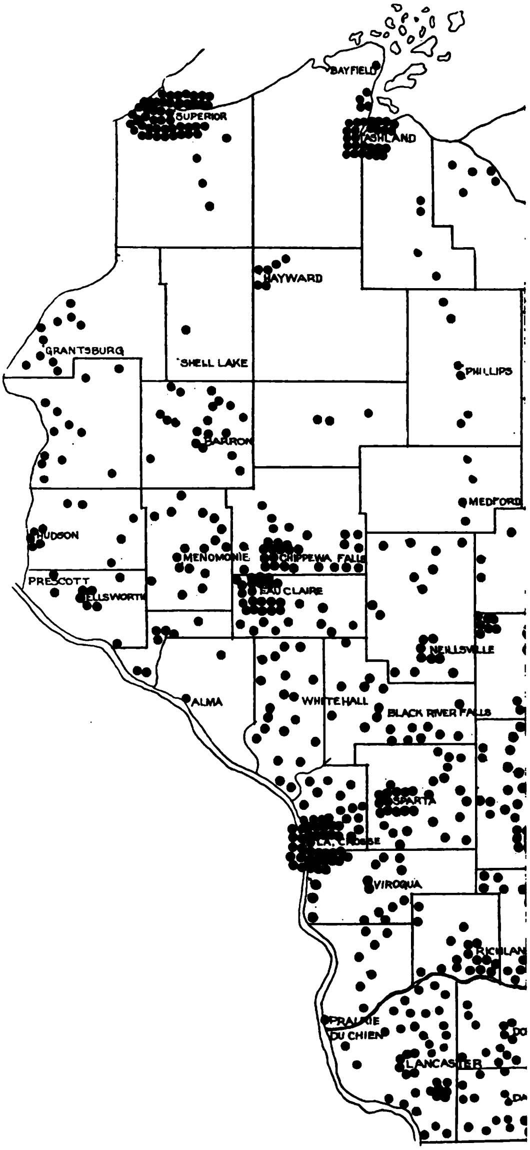
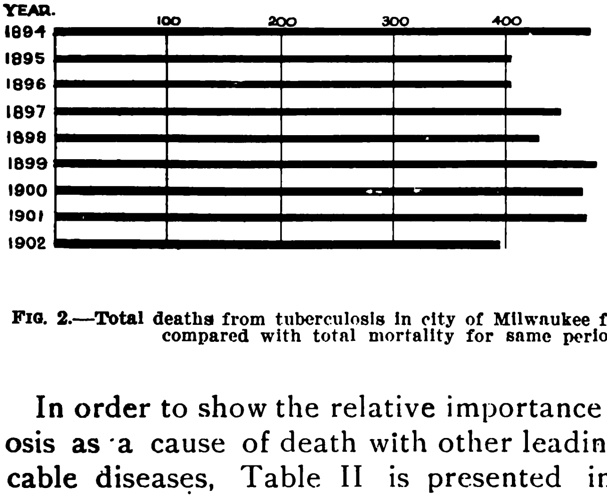


FIG. 1.—Deaths from tuberculosis
this disease: 2,175 deaths re
Milwaukee alone.

TUBERCULOSIS IN CITY OF MILWAUKEE.

As the disease is more prevalent where the density of population is greatest, a study of the statistics of the city of Milwaukee is of interest. In Fig. 2 is presented in graphical as well as tabular form the total deaths from tuberculosis in comparison with the entire deaths in the city.



TOTAL TUBERCULAR DEATHS.	TOTAL DEATHS ALL CAUSES.	PERCENT OF TUBERCULAR TO TOTAL DEATHS
481	4253	11.7
405	3885	10.4
405	3904	10.3
448	3606	12.8
430	3338	12.8
481	3843	12.2
468	4026	11.1
473	3833	12.3
395	3797	10.7
3986	34485	11.6

FIG. 2.—Total deaths from tuberculosis in city of Milwaukee from 1894 to 1902 compared with total mortality for same period.

In order to show the relative importance of tuberculosis as a cause of death with other leading communicable diseases, Table II is presented in which the yearly losses from four other diseases are shown.

TABLE II.—*Annual deaths in Milwaukee from diphtheria, typhoid, measles and scarlet fever compared with tuberculosis.*

	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	Total.
Tuberculosis	481	405	405	448	430	481	468	473	395	3,986
Diphtheria	165	112	254	106	61	109	124	100	85	1,116
Typhoid.................	70	63	46	31	46	47	59	63	48	473
Measles	69	1	29	36	2	36	36	17	36	252
Scarlet fever	12	5	4	3	2	36	70	16	10	158

The aggregate loss of life from these four most fatal contagious diseases is 1,999 for a period of nine years (1894-1902), while that due to tuberculosis is nearly twice that amount (3,986) for the same time. In Fig. 3 is shown in graphical form the same data.

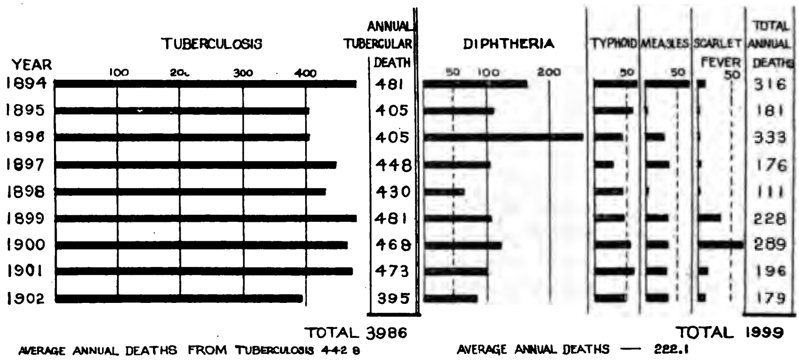


FIG. 3.—Comparison of tubercular deaths in city of Milwaukee with diphtheria, typhoid, measles and scarlet fever, for years 1894 to 1902.

RATIO OF ESTIMATED EXISTING TUBERCULAR CASES TO TOTAL DEATHS FROM TUBERCULOSIS.

The commission attempted to ascertain the actual number of existing cases of tuberculosis by making a case census in two of the most densely populated counties. Milwaukee and Waukesha. Two hundred and sixty requests were sent out to physicians in said counties, asking for the number of cases which they had under treatment at that time. Only fifty-eight replies were received in all, showing how difficult it is to get any accurate data on this point. The Milwaukee County Commission later on, and through our suggestion, decided to collect case records by delegating physicians in the city of Milwaukee to call upon their colleagues and to make a personal request for these cases, but with no better success. These obstacles compelled us to resort to the application of the general statistical ratio which has been worked out in other states between the case rate and the total death rate of tuberculosis. Generally this has been found to vary between 4-5:1. In other words, from 20 to 25 per cent of all cases of tuberculosis die each year. Assuming then that the total deaths in our state from tuberculosis are from 2,100 to 2,200 per annum, and probably even greater than this, and applying this established ratio to these total deaths, *there exists within the boundaries of our state from 9,000 to 10,000 cases of consumption*, of which 1,800 to 2,000 reside in Milwaukee.

(B) Suggestions as to Preventive Control by the State.

The causes which are concerned in the spread of tuberculosis are so well established, that we deem it unnecessary to enter into a detailed consideration of the same in this report, It is more important that efforts should be directed along the lines of prevention and treatment. Dr. H. M. Biggs of the New York City Health Department, in an article entitled: "The administrative Control of Tuberculosis," rightly says that "This is the great urgent sanitary problem of the new century. In no other direction can such large results be achieved so certainly and at such relatively low cost. The time is not far distant when those states and municipalities who have not yet adopted a comprehensive plan for dealing with tuberculosis will be recorded as almost commercially blind to their own best economic interest."

The best methods of control which a careful study of the problem has shown, may be included under the following heads:

(1) Anti-spitting laws or ordinances.
(2) Compulsory notification of existing cases.
(3) Education of the masses.
(4) Adequate disinfection of buildings.
(5) Introduction of a standard system of ventilation.

(6) The treatment of tuberculosis by the sanatorium method (especially in the incipient stages).

(7) Isolation hospitals for advanced cases.

(1) *Anti-spitting Ordinances.*

Since the sputum thrown off from the lungs of the consumptive is by far the most important factor in the dissemination of the disease, it follows that the custom of promiscuous spitting is directly associated with its spread. In those cities which have passed anti-spitting ordinances and *enforced* them, this evil has been greatly curtailed, and doubtless has led to the diminution of tubercle bacilli in public places. It is necessary where such ordinances are passed that proper provision be made for sputum receptacles in public places.

(2) *Compulsory Notification.*

This is one of the most important measures in successfully combating consumption. It is to be recommended that the State Board of Health should take a strong and definite position in regard to this, for the objections which are urged against its introduction have no real foundation. By compulsory notification we do not mean placarding the home, or in any way interfering with the affected individual, or his family. Even though a few cities, especially the larger ones, should pass local ordinances requiring compulsory notification, such as has been in practice in New York City for a number of years, this seems to us inadequate and incomplete. The commission is of the opinion that a uniform law should be passed compelling all physicians to report their cases directly to the State Board of Health, and thus bring tuberculosis in the same category as other communicable diseases. Such a notification should be regarded as of a confidential nature and any communication with the family would be made through the medium of the physician in charge. According to estimates made by

Dr. Biggs of the New York Health Department, 85 per cent of all cases of tuberculosis are now reported in this way. Since this system was introduced in New York City in 1897, the disease has been under much better control, and the death rate has rapidly decreased. From 1887 to 1900 the total deaths from consumption in New York City have diminished, according to Dr. Biggs, about 40 per cent.

(3) *Education of the Masses.*

To successfully wage war against this scourge, the masses must be educated as to the nature of the disease, the factors operative in its spread, and the value of rational hygienic measures in its treatment. Even such data could well be inculcated in our public schools while every other avenue should also be utilized whereby the general public could be brought to realize the gravity of the problem, for education is one of the most important, if not the strongest weapon that can successfully be used in the warfare against this disease. Undoubtedly the diminution in the death rate now observed in comparison with some decades ago is in a material way owing to the better education of the public as to the infectivity of the disease.

(4) *Disinfection of Buildings.*

Investigation of the channels of infection prove that infected, illy ventilated buildings are one of the chief, if not the most important, forces of infection. Owing to the carelessness and ignorance on the part of the tubercular occupant, the rooms become infected with the seeds of disease. The vitality of the disease bacilli is retained for the longest time in poorly ventilated, dark rooms, and the consequence is that such infected houses continually generate the scourge, family after family becoming infected in these plague-ridden buildings. Dust in the cities is frequently referred to as a source of danger, but for every case infected with tubercle bacilli outdoors there are probably ten thousand who contract the disease in the house! (Vt. Com. Rept., p. 16.) To prevent this widespread distribution, well-controlled disinfection should be made obligatory in all homes occupied by consumptives. In some eastern cities it is becoming more and more customary to insist on a clean bill of health from the city authorities before a prospective tenant will rent property for domestic purposes.

To show the conditions that actually obtain in the city of Milwaukee Fig. 4 is presented. Here old buildings, by reason of previous infection, serve to spread the disease to new individuals who inhabit them Six hundred and fifty cases of consumption were received and treated in the Milwaukee county hospital in the last ten years, the origin of a considerable portion of which has been traced to certain definite buildings.

Thirty-one cases originated from three buildings on Clinton street, numbers 115, 117 and 125.

Thirty-six cases from the alms house.

Sixteen cases from the house of correction.

Forty-six cases from a half block of buildings on Third, Fourth and Fifth streets.

One hundred and sixty cases from buildings located in the heart of Milwaukee's business district, comprising an area of five square blocks.

The pestilential character of such infected quarters is more strikingly borne out when the cases are distributed throughout the various years. The three houses on Clinton street have contributed almost every year, one or more cases of tuberculosis to the county hospital, as is shown below. In all probability the total number of cases occurring in these pest holes is larger than here reported, as only those which applied for help at the county hospital are here detailed.

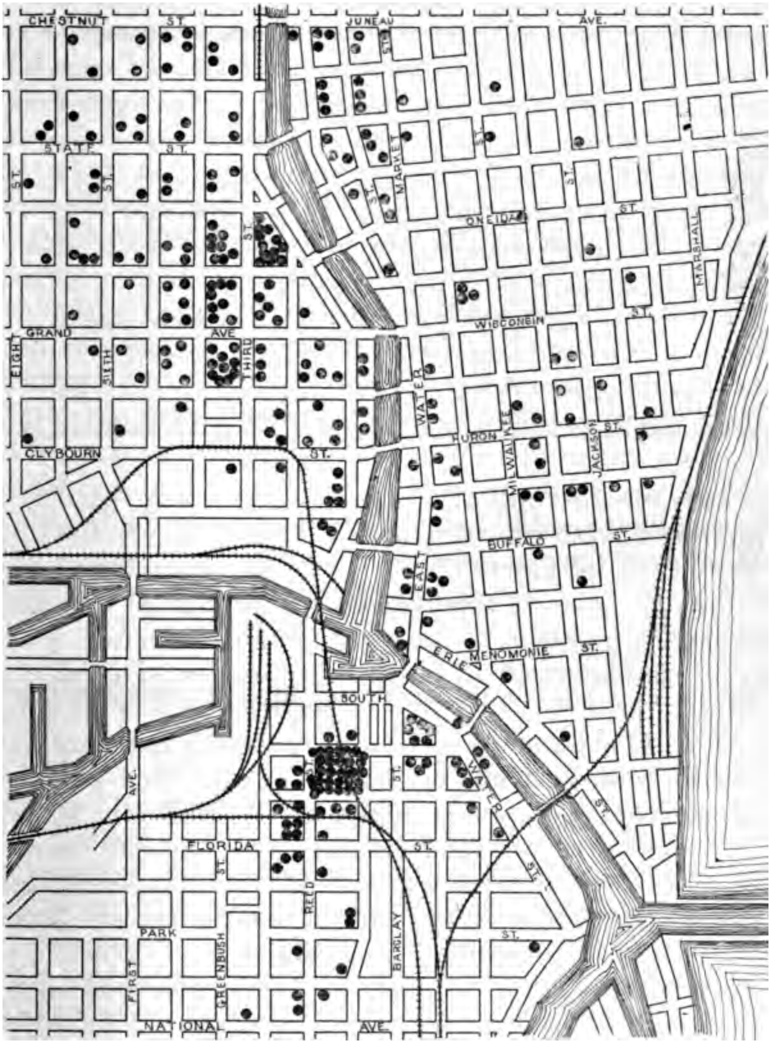


FIG. 4.—Section of a portion of city of Milwaukee, showing location of tubercular cases received at County Hospital from 1893 to 1903. Thirty-one cases came from three street numbers in one block south of the river. As these represent only cases admitted to the hospital, the total number of tubercular cases would be greatly in excess of this.

Cases of tuberculosis at Milwaukee County Hospital originating in three different houses on Clinton street, from 1893 to 1903.

	No. 115.	No. 117.	No. 125.
1893	1		
1894	1		
1895		1	
1896		1	1
1897		2	3
1898		3	2
1899		1	2
1900		3	1
1901		0	0
1902		1	3
1903	1	3	1
	3	15	13

This record duplicates in a general way the statistics gathered from the celebrated "lung" block in New York City, in which in the last nine years there were found 269 cases of tuberculosis. The city of Chicago has block on block of such plague-contaminated quarters. In one block on Clark street on two sides of the street, there have been recorded 138 cases in four years. One hundred and sixty-nine cases registered at the hospital at Dunning suffering with this disease, came from 158 street numbers on Madison street. These histories are far from being a complete record of all tubercular cases supplied by these plague-ridden buildings, because many contract the disease and leave such places before their case reaches the attention of the health officials. Nothing could more forcibly demonstrate the truth of the proposition that tuberculosis, above all, is a house disease. As Flick well says, the house is the granary in which the tubercle bacillus is stored outside of its own host. If these quarters were thoroughly disinfected after each case of the disease was discovered, new families occupying these plague spots would not be subjected to such infection.

(5) *Ventilation.*

Ventilation in buildings of all kinds, and especially in sleeping apartments, has been and is nearly or entirely ignored and neglected. It is a most important accessory to the maintenance of health. It appears to us that it is just as necessary and vital to interfere with the causes which tend to reduce the forces of the human body capable of resisting disease, as to seek for and destroy the cause of the disease itself. The importance of requiring adequate ventilation in all public buildings, factories, asylums, and hospitals is therefore evident, and greater attention should be given to these matters. Experiments made by the Pennsylvania Live Stock Sanitary Board on the contraction of tuberculosis show that the disease was propagated to healthy animals very much more rapidly in dark, poorly ventilated barns than in well-aired and well-lighted stables, and the same principle has been demonstrated with reference to the human type of the disease.

(C) The Desirability of the Sanatorium Treatment of Tuberculosis.

All civilized nations are makingstrenuous efforts to check the ravages of this dreaded plague. A most practical question is how can the state further and develop this work? It may be said that it can be carried on by philanthropic organizations, but it is impossible for these alone to cope with the problem. Moreover, it is the duty of the state to take up this work of prevention and possible cure, if it can be shown to be a feasible proposition. Among the most successful means of combatting the disease is the treatment of cases in sanatoria by the open air and rest treatment. Some years ago it was thought that the most beneficial results could only be secured by a change in climate, and for this purpose, certain regions in the west acquired an enviable notoriety. However, more recent experience has amply demonstrated that the climatic conditions are not nearly so essential as was formerly believed. The results obtained in New England sanatoria, near the sea shore are fully as good as those noted in the Adirondacks or in the western states.

The results obtained under sanatorium conditions so far surpass all other methods of treatment, that this system is now being very rapidly extended and it becomes the duty of the state to aid its own citizens toward recovery, particularly those unable to help themselves. It would of course be impossible to care for more than a small fraction of the total number of individuals affected, but this does not lessen the duty of the state to do what it can toward the alleviation of suffering.

(1) *Economic Aspect.*

Merely as an economic problem, entirely independent of its humanitarian aspect, the state cannot afford to let 2,200 of its inhabitants die every year if a considerable number can be saved, while at the present time there are at least 9,000 of her citizens rapidly wasting away to an untimely grave. No disease makes such a drain on the resources of the family, for its long insidious course prevents the wage earner from earning his daily bread, while at the same time, the family is often plunged into debt and actual want. The state must often take up the burden which the family can no longer carry, so that it must provide for the indigent as well as suffer the loss in aggregate wealth which its affected citizens are forced to bear. Next to insanity, tuberculosis throws a larger burden on the state than any other disease, in that many families are rendered dependent upon public charity to a greater or less extent by its ravages. The actual loss in earning capacity of the affected individual when he happens to be the wage earner can be quite readily computed as well as expenses incidental to the sickness itself but the potential loss to the community at large is more difficult to ascertain. The aggregate however is enormous and unquestionably outranks many fold any other other disease from which mankind suffers. If we neglect for the moment the misery, worry, grief and suffering of the stricken patients, and those dependent upon them, would it not, from merely a financial view point alone, be good statesmanship to check, at least in part, this drain on the productive capacity of the commonwealth which is measured in millions every year.

In two years alone the insurance companies of Germany spent $1,000,000 for the erection and maintenance of sanatoria in which to treat their consumptive policy holders. This was done only after it was demonstrated good policy from merely a business point of view to heal as many of their stockholders as possible. If a business corporation finds it worth while to prolong the lives of its policy holders, is it not worth while for the state itself to extend a helping hand to these unfortunates?

The national and state governments in our own country have spent hundreds of thousands of dollars for the restriction and eradiction of this same disease in cattle recognizing as a plain business proposition the desirability of holding in check the disease among our domesticated stock. Is not human life worth as much as this, even in our commercial age?

(2) *Humanitarian Aspect.*

But the state should settle this problem on a much higher plane than an economic one. For the sake of the unfortunates that are stricken in the prime of young manhood and womanhood, for the sake of thousands of other citizens who are exposed to the contagion disseminated by those now affected, the state should not only strive to limit the spread of the disease and eradicate infected foci, but should offer succor and help to those now suffering, when in doing so, it can hold out a reasonable prospect toward recovery or marked improvement in health.

The state provides for its other unfortunates, as is evinced by such noble and humane institutions as the asylums for the insane, homes for the feeble minded, dependent children, etc. Adequate provision is made for these classes that are often a constant and a continual burden to the state until death brings relief. Can not the state do as much to help this class, which, in many cases, if aid is extended for even a short time (generally much less than one year), means restoration to health and activity.

(3) *Removal of Danger to Others.*

Then, too, provision should be made for the consumptive because in his present helpless, ignorant condition, he is a continual menace to his family and the remainder of the community, endangering the lives of every one else, spreading misery, disease and death over all the land. Through the medium of the sanatorium, the danger to the community is entirely removed, as well as continued reinfection of the case itself. It has been amply demonstrated that there is positively no danger whatever of a person contracting the disease in a properly conducted tuberculosis sanatorium. Dr. Trudeau at Saranac Lake, reports that not a single case has ever been developed in nineteen years among the nurses and employes at the Adirondack institution.

(4) *Educational Influence.*

As an educational factor in this struggle against the great white scourge these discharged and cured patients exercise a most potent influence, and are a living example to the well and the afflicted, of what can be accomplished by proper hygienic methods. During their residence in the sanatorium they are taught right ways of hygienic living. They learn the value and importance of fresh air, the necessity of proper nourishment, so that when they are discharged and return to their homes, they carry with them a gospel of health to friends and neighbors. From the standpoint of the state, undoubtedly the influence of those who have thus been saved from an untimely grave will be most potent in lessening the ravages of the disease in the future.

It must be remembered that the direct and indirect influence of the sanatorium is not at all limited by the number of its inmates at any one time. In this respect it differs markedly from the asylum or hospital in which the population is largely permanent. In these sanatoria, the average residence is about six months; consequently the annual capacity is at least double the number of inmates housed at any one time. The educative influence is, therefore, increased very much by reason of this fact.

(5) *Advantage of Sanatorium over Private Treatment.*

While it is possible for successful treatment of this disease to be carried on outside of an institution by the application of the same general hygienic methods of living, the material advantages which accrue from residence in properly regulated sanatoria are such as make this type of treatment much preferable to individual effort.

1. In the sanatorium the patient is under constant medical supervision, a point of the greatest importance when questions of diet, baths, exercise, etc., are to be daily considered.

2. The rigid discipline to which all inmates must conform is designed for the best interests of the affected patient. More frequently through ignorance, but often through a lack of self-control, cases undergoing individual-treatment do not make the progress that institutional cases do. It is only possible in institutions to impart those hygienic principles of living that make the "graduate" of the sanatorium an educative factor in their respective communities when they return to their homes.

3. The mental attitude of the patient toward his disease is much better in institutions than when alone and the advantage of companionship under such conditions is not to be ignored. In this respect a tuberculosis sanatorium is far different from an ordinary hospital. Every effort is made to divert the patient from brooding over his malady and the atmosphere of such an institution is decidedly optimistic.

Growth of the Movement Relative to Sanatorium Treatment.

A. EUROPEAN COUNTRIES.

Bodington in England, and Brehmer in Görbersdorf, Germany, were the first to introduce this method about fifty years ago. Both were ridiculed by their friends, but in spite of this, continued to push the method energetically. In his first report, which was published about twenty-five years ago, Brehmer showed that the mortality in his sanatorium was only 6 per cent, and that 89 per cent of all his cases were improved, while 22 per cent were absolutely or relatively cured. At this time the mortality in general hospitals was about 50 per cent.

Brehmer's report aroused the medical world, as well as the laity from their apathy and indifference, with the result that numerous institutions have been erected all over Germany, by private capital, and philanthropists, in which the same brilliant results have been obtained. It was not until 1882, when Koch isolated the cause of this disease, the bacillus of tuberculosis, that the German government saw fit to take up this important matter. With the determination of the exact way in which the disease is disseminated, and the absolute necessity for hygienic control, the government was in duty bound to protect its citizens for the public weal. The growth of the movement was very rapid, until now there are in Germany alone, 90 institutions, having an annual capacity of 30,000 patients. This idea soon spread from Germany to other countries, as well as to our own. To show how it has gained recognition, note the development up to the present time.

Distribution of Sanatoria in the Different Countries.

Germany—has ninety sanatoria under government, state and private control.

Australia—has forty-five sanatoria under government, state and private control.

Great Britain—has two and the third is to be erected in Queensland. In New Zealand they are contemplating the erection of several sanatoria, and the city of Sydney has devoted property valued at over $100,000 for the same purpose.

Switzerland—has ten sanatoria, government, state and private control.

Norway—has seven sanatoria, government, state and private control.

Japan—Here the government has erected a hospital for the treatment of tuberculosis, and for research work, relative to this disease.

Russia—has four sanatoria for adults and two for children, and additional sanatoria are under construction, government, state and private control.

Portugal—has two sanatoria.

Spain—has two sanatoria, one private, the other belongs to the government.

Italy—has quite a few hospitals on the sea shore for scrofulous children.

Sweden—has three sanatoria.

Hungary—has one in Budapest, and the government contemplates the erection of numerous asylums or hospitals for advanced cases.

Ecuador—has one sanatorium.

Central and South America—Argentine has one national sanatorium for adults and one for children.

Bulgaria—has two national sanatoria for adults and one for children.

Turkey—is practically the only country in Europe that has not fallen in line in this work.

Results obtained in European Institutions.

The records taken from the official reports of the German insurance companies who have founded these institutions as a business proposition, show from 1897 to 1900, 27,176 persons were treated, of which 68 to 74 per cent of the men, and 68 to 73 per cent of the women were discharged as greatly improved or cured.

Turban of Davos, Switzerland, reports results from cases including all stages; of which 68 per cent were discharged as apparently cured. The number of cases treated were 408. The following data are presented from five German sanatoria. These institutions are Grabowsee, Ruppertsheim, Planegg, Görbersdorf and Belzig, in which were treated 6,671 cases, of which

2,070 were in the first stage
2,091 were in the first and second stages,
1,398 cases were in the second stage,
585 cases were in the second and third stages,
1,656 cases were in the third stage,
90 per cent. increased in weight,
20 per cent. lost the cough,
66 per cent. lost the fever,
27 per cent. lost the bacilli,
84 per cent. lost night sweats,
28 per cent. were cured,
52 per cent. were markedly improved and able to work,
55 per cent. were improved and able to work.
20 per cent. were partially able to work,
5 per cent. died.

Five sanatoria for children in France report excellent results. The cases here treated were all in the incipient stages. In 31 per cent of the cases there was an apparent arrest of the disease, and in 68 per cent there was marked improvement.

In 23 sanatoria for pay patients in different European countries, including patients in all stages, there was an apparent arrest in about 40 per cent, and a real improvement in 80 per cent; in 16 sanatoria for the poor, including patients in all stages, there was an apparent arrest in about 27 per cent, and a real improvement in 85 per cent.

Of 48 sanatoria reporting as to whether better results were obtained at any particular season of the year, 21 reported definitely that no different results were obtained at any particular season, and in 11 cases no noticeable difference observed, and 16 reported best results in winter.

B. DEVELOPMENT OF THE SANATORIUM IDEA IN AMERICA.

The earliest work along the lines of sanatorium treatment in this country was done under private auspices. The pioneer in this movement was Dr. E. L. Trudeau, who went into the Adirondacks some thirty years ago to recover from this disease. He established, in 1885, the Adirondack Cottage Sanitarium, which has grown steadily in size and influence. The results obtained have been very gratffying.

The record for the year 1903 of the cases under treatment showed that 34 per cent were in the incipient stages, and 65 per cent in the advanced stages when admitted. Of these, 26 per cent were discharged as apparently cured, 46 per cent more with the disease arrested, 16 per cent partially improved, while only 10 per cent failed or died.

Numerous other private institutions have been founded in various localities in the mountainous regions of the east, such as the Canadian Highlands, the Adirondacks, Catskills, Blue Ridge, Piedmont Plateau of North Carolina and Georgia, as well as in the more arid regions of the west and southwest. The majority of these resorts are intended for pay patients, although a few of them have a number of beds maintained by philanthropic individuals and benevolent organizations. There is, however, no adequate provision for the poor and indigent, a class whose susceptibility is much increased by virtue of the economic conditions under which they are forced to live.

While preference was originally given to places having some considerable elevation (1,000–2,000 feet above sea level), a number of institutions have been established at much lower levels, as in eastern Massachusetts, where the climatic conditions are not nearly as favorable as exists almost anywhere in Wisconsin.

The success which has been attained in these institutions, even under adverse climatic conditions, has been uniformly so great that it has given a wonderful impetus to the development of this method of treatment by municipalities, by the individual states, and by the federal government. The necessities of the case were naturally the most urgent in the cities, and such municipalities as New York, Philadelphia, Chicago, Cleveland, Cincinnati, Baltimore, Providence and others, have made more or less adequate provision for the succor of the afflicted within their own limits. Several hospitals have been opened in New York City by the municipality itself, and a number of others are under private control, but admit all applicants. Boston last year voted $150,000 for a city hospital for the exclusive treatment of this disease. In Philadelphia is the Lucian Moss home for incurables and the tent connected with it for the open air treatment of tuberculosis, which has been constantly filled; at no time is a bed vacant. At the Chestnut Hill hospital for diseases of the lungs, patients are received in all stages. In this way a number are received who die within a period of from a few days to a few weeks. From 23 to 33 per cent of all patients admitted during the past twelve consecutive years have been discharged as improved or apparently cured.

At the Philadelphia hospital six new pavilions for consumptives have been erected at the cost of $125,000, and are just ready for occupancy.

STATE SANATORIA.

Massachusetts was the first state to start the movement on state lines. A state sanatorium was authorized in 1895, the original capacity of which was 170, but has since been materially increased. For 1903, 484 cases were admitted, the average length of stay being about six months. Since the opening of this institution six years ago, 2,843 patients have been treated. Results reported from this institution are as follows:

Percentage of incipient cases arrested or apparently cured.

1898.	1899.	1900.	1901.	1902.	1903.
64.6	72.9	73	72	72.6	75.8

Although New York has 33 institutions within her boundaries for the private or philanthropic treatment of tuberculosis, the aggregate capacity of which is about 2,500 beds, the state has recently built and equipped a large sanatorium in the Adirondacks at Raybrook for the treatment of incipient cases, preference being given to the indigent. This institution was only opened for patients last summer, hence no statistics as to treatment are available. In Pennsylvania and also in Connecticut, the state has taken up the matter, cooperating with the existing organizations which were already in the field. The Rhode Island legislature two years ago appropriated $96,000 for buildings and the structure is now ready for occupancy. New Jersey has located a large institution at Glen Gardner, the legislature of 1904 appropriating $200,000 for the purpose. Ohio and Minnesota each have decided to go ahead on the lines of the state institution and have appropriated $35,000 and $25,000 respectively for the purchase of a site.

In a considerable number of other states, Vermont, New Hampshire, Iowa, Georgia, Maryland, Maine, commissions are at work investigating local conditions, carrying on a campaign of education to awaken public sentiment. This year witnesses a greater activity in arming for the struggle against this disease than ever before.

Can Wisconsin afford to longer neglect her own suffering poor? Cannot she stand with her sister states in this struggle against the greatest scourge to the race?

The Federal Government has made provision for the treatment of its soldiers and sailors at Fort Bayard and Fort Stanton in New Mexico. All classes of cases are sent to these barracks; consequently the mortality is high, yet at Fort Stanton of the 303 cases treated from November, 1900, to May, 1902, 37 were discharged as apparently cured, 27 improved, 9 not improved, 45 died, and 107 were still under treatment. The National Sanatoria Association of Canada has a Cottage sanatorium at the Muskoka Lakes, Canada. Of the 422 cases treated, 72 were discharged as apparently cured, 124 were able to go to work again, and 104 showed marked improvement. The range in period of residence varied from four to ten months.

PERMANENCY OF THE CURE PRODUCED.

When the patient is discharged from the sanatorium as having the disease arrested or apparently cured, it is impossible to tell with absolute accuracy the permanency of such results. It may happen that a return to infected quarters and an in-door vocation in which the surroundings are of an unfavorable character will bring back a recurrence of the malady, but in the majority of cases, the principles of right hygienic living inculcated during the stay in the institution bear good fruit after discharge. Not many of the sanatoria in this country have been in operation long enough to enable statistics of much value to be collected. Recently, however, such a compilation on this point has been made by Dr. Brown, of the Adirondack Cottage Sanitarium. He has secured the subsequent histories of 1,066 cases that were treated from 2 to 18 years ago. Of this number 31 per cent are well today. Of the 258 cases admitted to the institution as incipient, 66 per cent are now well; of 563 cases in which the condition of the disease was regarded as advanced when admitted, 28.6 per cent are still healthy.

The results obtained in the Sanatoria controlled by the German industrial insurance companies showed, with 27,176 cases treated from 1897 to 1900, 34 per cent able to work after the lapse of one year; 27 per cent after two years; and 26 per cent after three years. Of those treated in 1898, 38 to 44 per cent were alive and apparently well after one year.

At Davos, Switzerland, where mixed and not incipient cases are accepted, 68 per cent were discharged as apparently cured, while 48 per cent of these patients were reported as well from one to seven years after dismissal.

Within the last five years there has been a general movement all along the line in regard to this question, and the fruits of such agitation are seen on every hand. Wherever vital statistics are kept with sufficient accuracy to warrant statistical studies being made, the results are everywhere the same, the losses from tuberculosis are being rapidly lessened. Witness the results in New York City alone where a diminution of 40 per cent in tubercular deaths has occurred within the last few years, a showing due to the influence of definite, correct, intelligent, concerted action. This disease is the most easily cured of all chronic maladies. If we simply give nature a chance, she will restore the affected individual in many cases. This can be done better and with more certainty in the sanatorium than in any other way.

As Dr. Trudeau, the pioneer of this movement, said last year at the opening of the Stony Wold Sanatorium for New York working girls: " I think the sanatorium treatment has now proved its usefulness and the great truth which it struggled for so long; namely, that if consumption be detected early, it can then be cured in many cases, while in many others life may be prolonged and made endurable; that the sanatorium makes missionaries of its patients, who scatter everywhere the knowledge which it is important to make generally known in regard to the prevention of the disease in others.

(D) Selection of Site or Sites for Proposed Sanatorium.

In order to be guided more specifically in the proper selection of a site for the proposed sanatorium, the commission has put itself in communication with a number of other state commissions, and has also visited the more important eastern institutions, both under state and private control, in which this disease is treated.

As a result of these studies, the following conditions are submitted as important, and should be taken into consideration in selecting a proper site.

(1) *General Accessibility.*

Of first importance is the general accessibility of the selected site; it should be located on or near a trunk railroad line, readily accessible from the more thickly populated portions of the state, so as to cause the minimum inconvenience in transferring patients from their homes to the sanatorium. It is preferable not to have it too far distant from a railroad station, yet it should not be located in a town or village. The expense of administration is materially increased if the location is too remote from settled regions.

(2) *Climatic Consideration.*

The value of climatic conditions in the treatment of this disease has been greatly overestimated in the past.* Still for several reasons a relatively low degree of humidity and equability of temperature is, of course desirable if it can be secured, but a maximum amount of sunshine is much more important than the mere matter of temperature or moisture. It is therefore advisable not to locate the proposed sanatorium in close proximity to the great lakes, as the climatic conditions which obtain here are somewhat less favorable from a general point of view than would obtain further inland, where the air is somewhat dryer and the percentage of winter sunshine greater.

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* Recently it was considered necessary to resort to certain special localities, like the mountainous regions of the west, where the climatic surroundings were thought to be especially favorable, but more recent experience has demonstrated that equally as good results can be secured by sanatorium treatment in almost any section of the country.

(3) *Protection from Winds.*

In selecting a proper location, protection from winds especially those of winter, is of more importance than almost any other factor, inasmuch as it is necessary for the patients to remain out of doors a large ortion, if not all day, winter as well as summer. Care must be taken that ample protection be afforded by means of hills and forests, not only to the sanatorium itself, but especially to the surrounding walks and grounds that are used by the patients in their exercise. This protection should be especially good from east winds (on account of their increased humidity), and the prevailing winter winds which are usually north or northwest in most portions of the state. This protection can best be secured by placing the building on the southern aspect of good sized hills, and the desired protection is greatly improved if such hills are well covered with vigorous forest growth.

(4) *Influence of Forests.*

It is a popular belief that some peculiar virtue is inherent to coniferous forests, but such a hypothesis has no substantial basis for support. The main advantage of forested areas is the relative freedom from dust, and that condition is quite as well secured in a hardwood as in a coniferous forest. Locally their chief beneficial function is that of a windbreak.

(5) *Altitude.*

Formerly it was thought that the altitude of any locality was of material importance in the selection of a proper location, but this factor is now regarded as of less value, Moderate elevations (from 1,000 to 1,200 feet) are to be preferred to extremely high altitudes. The only advantages which the higher altitude possesses are those which are incident to the elevation namely, (lower temperature, less precipitation and dryer air). Too marked an increase in altitude is not infrequently deleterious to the health of the consumptive.

(6) *Local Elevation.*

The sanatorium site and immediate surroundings should be placed on rolling or hilly grounds, so that the patients are not exposed to the influence of local fogs.

In the fall of the year cold, damp air currents are apt to settle in the valleys, especially in the vicinity of lakes and streams. It is therefore desirable that the local elevation be sufficient to place the site above such currents.

Hilly surroundings are also desirable for the purpose of exercise. Walks and paths protected by windbreaks should be laid out for the exercise of patients, and it is desirable that gentle, graded ascents be used by the patients when possible. If possible, a high elevation should be had for water reservoir, so as to have abundant fire pressure.

(7) *Sightly Location.*

A fine prospect is desirable for the mental effect which it exerts upon patients. Therefore the buildings should be placed so as to have favorable views, vistas, etc. Woodland and water make the ideal combination, and if the same can be secured without losing other essential characteristics, it is very desirable that such a location be chosen. Immediate proximity to the water is not so important, but on the other hand, it is not undesirable, if the site is sufficiently high to escape local dampness and fogs. Lakes are preferable to river views, as they are less liable to have strong wind currents. Large lakes afford an opportunity for more severe wind action, and are not so desirable as smaller, irregular lakes that can be used for recreation purposes in a greater range of weather.

(8) *Character of Soil.*

The immediate surroundings of the sanatorium should be placed on light, well-drained soil. It is especially desirable that the walks and paths be constructed so as to dry quickly after rains. For this purpose a sandy or gravelly loam is best suited. Clay soils are to be avoided because of the amount of moisture which they retain. It is also desirable to have light soils for the proper and efficient disposal of sewage.

In close connection with the area devoted to buildings and grounds, there should be soil suitable for certain types of farming, especially grazing, so that stock can be kept for dairy purposes. For this purpose naturally a heavier soil could be utilized than for the immediate surroundings of buildings.

(9) *Accessibility of Food Supplies.*

One of the most important factors in the treatment of tuberculosis is to supply the patients liberally with good, nourishing food. Eggs, milk and vegetables make up the main constituents of such a dietary, and they must be had in fresh condition and in abundance. It is therefore advisable that dairy products, poultry and garden vegetables be produced on the farm, or if this is not done, that the sanatorium be not too far distant from a regular and adequate source of supplies of this character. As it is advisable to have the dairy herd tested for tuberculosis, it should be under the immediate direction of the sanatorium authorities.

Swine can well be utilized to consume a large part of the kitchen refuse.

(10) *Size of Area Desired.*

In order to control the neighboring surroundings, considerably beyond the limits actually used by the patients in their regular exercise, and also because of the need of land for agricultural purposes, and to prevent encroachment from undesirable sources, it is desirable that the tract secured be at least several hundred acres. The short-sighted experience of several eastern sanatoria in this matter furnishes several cogent examples of the necessity of controlling considerable tracts.

(11) *Water Supply.*

An adequate supply of pure drinking water, preferably from a spring or subterranean source, should be had. This must be protected securely from all danger of pollution. There should also be an abundant supply for fire protection, and possibly for irrigation of garden crops.

Examination of Different Sites.

After having determined the conditions desirable to take into consideration in the matter of the selection of a site for the proposed sanatorium, correspondence was taken up with persons in each county in which it was deemed advisable to make a further study. A considerable number of locations have been suggested voluntarily and upon solicitation, and a systematic examination made of those regarded as possibly eligible. The great majority of the sites investigated have been found lacking in several important and quite essential particulars. Several localities, however, have been found which fulfill more or less completely the requirements recorded as essential for institutions of this character. These have been placed in the eligible class for further consideration. For obvious reasons it is preferable not to publicly announce the final decision of the commission relative to eligible sites as such a course would without doubt result in the material enhancement of values placed upon the selected properties. This eligible list is, however, submitted to you for future consideration. The most suitable locations are summarily described, and the relative merits of the leading localities compared.

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